

**WHAT IS CLAIMED IS:**

1. An absorbent product comprising an absorbent material and a composition disposed within said absorbent material, the  
5 composition having:

at least one antibacterial agent; and

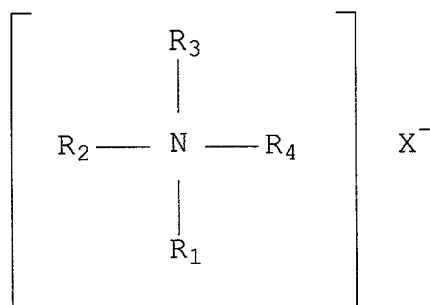
at least one finishing agent,

10 wherein the composition has synergistic antibacterial properties effective to neutralize the production of toxin and reduce *Staphylococcus aureus* bacteria growth.

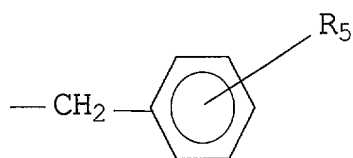
15 2. The absorbent product of claim 1, wherein said at least one antibacterial agent is selected from the group consisting of: quaternary ammonium compound, glyceryl monolaurate, 5-chloro-2-(2,4-dichlorophenoxy)-2,4,4'-trichloro-2'-hydroxy diphenyl ether (triclosan), p-chloro-m-xyleneol, N-(4-  
20 chlorophenyl)-N'-(3,4-dichlorophenyl) urea (triclocarban), 2-N-octyl-4-isothiazolin-3-one, iodine-based compounds, and any mixtures thereof.

25 3. The absorbent product of claim 1, wherein said at least one antibacterial agent is one or more quaternary ammonium compounds.

4. The absorbent product of claim 3, wherein said one or more quaternary ammonium compounds have a chemical structure:



wherein X is selected from the group consisting of: a halogen  
 5 and a saccharinate; R<sub>1</sub> and R<sub>3</sub> is a straight or branched C<sub>1</sub>-C<sub>4</sub>  
 alkyl; R<sub>2</sub> is a straight or branched C<sub>6</sub>-C<sub>22</sub> alkyl; and R<sub>4</sub> is of the  
 chemical structure:



10 wherein R<sub>5</sub> is selected from the group consisting of: H, a  
 straight or branched C<sub>1</sub>-C<sub>4</sub> alkyl group, and a halogen.

5. The absorbent product of claim 4, wherein said one or  
 more quaternary ammonium compounds are selected from the group  
 15 consisting of: alkyl dimethyl benzylammonium chloride, alkyl  
 dimethyl ethylbenzylammonium chloride, myristyl dimethyl  
 benzylammonium chloride, lauryl dimethyl ethylbenzylammonium  
 chloride, alkyl dimethyl benzylammonium bromide, alkyl dimethyl  
 benzylammonium cetyl phosphate, alkyl dimethyl benzylammonium  
 20 saccharinate, and any mixtures thereof.

6. The absorbent product of claim 4, wherein said one or more quaternary ammonium compounds are a mixture of alkyl dimethyl benzylammonium chloride and alkyl dimethyl ethylbenzylammonium chloride.

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7. The absorbent product of claim 6, wherein said quaternary ammonium compounds are present in an amount of about 1.0 wt.% based on the total weight of the absorbent product.

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8. The absorbent product of claim 3, wherein said quaternary ammonium compounds are present in an amount about 0.01 wt.% to about 5 wt.% based on the total weight of the absorbent product.

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9. The absorbent product of claim 1, wherein said at least one antibacterial agent is present in the absorbent product in an amount about 0.01 wt.% to about 5 wt.% based on the total weight of the absorbent product.

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10. The absorbent product of claim 1, wherein said at least one finishing agent is one or more surfactants.

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11. The absorbent product of claim 10, wherein said one or more surfactants are selected from the group consisting of nonionic, anionic, cationic, amphoteric, and any mixtures thereof.

12. The absorbent product of claim 10, wherein said one or more surfactants are present in an amount about 0.01 wt.% to about 10 wt.% based on the total weight of the absorbent product.

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13. The absorbent product of claim 10, wherein said one or more surfactants are one or more nonionic surfactants.

14. The absorbent product of claim 10, wherein said one or more nonionic surfactants are selected from the group consisting of one or more: alcohol ethoxylates, alkylphenol ethoxylates, carboxylic acid esters, ethoxylated anhydrosorbital esters, glycerol esters, poly(oxyethylene-co-oxypropylene) based surfactants, polyoxyethylene fatty acid amines, polyoxyethylene fatty acid esters, polyethylene glycol, polyethylene glycol esters, and any mixtures thereof.

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15. The absorbent product of claim 14, wherein said one or more nonionic surfactants are one or more polyoxyethylene fatty acid esters.

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16. The absorbent product of claim 15, wherein said polyoxyethylene fatty acid ester is present in an amount about 2.5 wt.% based on the total weight of the absorbent product.

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17. The absorbent product of claim 1, wherein said at least one finishing agent is present in an amount about 0.01 wt.% to about 10 wt.% based on the total weight of the absorbent product.

18. The absorbent product of claim 1, wherein said absorbent product is selected from the group consisting of: catamenial tampons, wound dressings, disposable diapers, sanitary napkins, medical tampons, surgical tampons, dental  
5 tampons, and nasal tampons.

19. The absorbent product of claim 1, wherein said composition further comprises one or more additional components selected from the group consisting of: preservative, deodorant,  
10 fragrance, malodor counteractant material, humectant, and any combinations thereof.

20. A method of inhibiting the production of TSST-1 toxin by exposing TSST-1 toxin-producing Staphylococcus aureus  
15 bacteria to an absorbent product, the absorbent product having an absorbent material and a composition, the composition comprising:

at least one antibacterial agent; and  
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at least one finishing agent,

wherein the composition effectively neutralizes the production of toxin and reduces Staphylococcus aureus bacteria  
25 growth.

21. The method of claim 20, wherein said at least one antibacterial agent is selected from the group consisting of: quaternary ammonium compound, glyceryl monolaurate, 5-chloro-2-

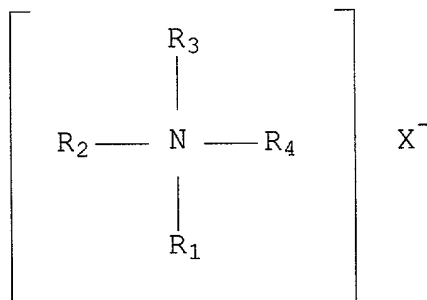
(2,4-dichlorophenoxy)-2,4,4'-trichloro-2'-hydroxy diphenyl ether (triclosan), p-chloro-m-xylenol, N-(4-chlorophenyl)-N'-(3,4-dichlorophenyl) urea (triclocarban), 2-N-octyl-4-isothiazolin-3-one, iodine-based compounds, and any mixtures thereof.

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22. The absorbent product of claim 21, wherein said at least one antibacterial agent is one or more quaternary ammonium compounds.

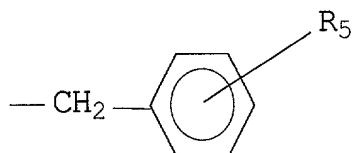
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23. The method of claim 22, wherein said one or more quaternary ammonium compounds has a chemical structure:



wherein X is selected from the group consisting of: a halogen

15 and a saccharinate;  $\text{R}_1$  and  $\text{R}_3$  is a straight or branched  $\text{C}_1\text{-C}_4$  alkyl;  $\text{R}_2$  is a straight or branched  $\text{C}_6\text{-C}_{22}$  alkyl; and  $\text{R}_4$  is of the chemical structure:



wherein R<sub>5</sub> is selected from the group consisting of: H, a straight or branched C<sub>1</sub>-C<sub>4</sub> alkyl group, and a halogen.

24. The method of claim 22, wherein said quaternary ammonium compounds are present in an amount about 0.01 wt.% to about 5 wt.% based on the total weight of the absorbent product.

25. The absorbent product of claim 21, wherein said one or more quaternary ammonium compounds are selected from the group consisting of: alkyl dimethyl benzylammonium chloride, alkyl dimethyl ethylbenzylammonium chloride, myristyl dimethyl benzylammonium chloride, lauryl dimethyl ethylbenzylammonium chloride, alkyl dimethyl benzylammonium bromide, alkyl dimethyl benzylammonium cetyl phosphate, alkyl dimethyl benzylammonium saccharinate, and any mixtures thereof.

26. The method of claim 25, wherein said one or more quaternary ammonium compounds are a mixture of alkyl dimethyl benzylammonium chloride and alkyl dimethyl ethylbenzylammonium chloride.

27. The method of claim 25, wherein said one or more quaternary ammonium compounds are present in an amount about 1.0 wt.% based on the total weight of the absorbent product.

28. The method of claim 20, wherein said at least one antibacterial agent is present in an amount about 0.01 wt.% to about 5 wt.% based on the total weight of the absorbent product.

29. The method of claim 20, wherein said at least one finishing agent is one or more surfactants.

30. The method of claim 29, wherein said one or more  
5 surfactants are selected from the group consisting of: nonionic, anionic, cationic, amphoteric, and any mixtures thereof.

31. The method of claim 29, wherein said one or more surfactants are one or more nonionic surfactants.

32. The method of claim 31, wherein said one or more nonionic surfactants are selected from the group consisting of: alcohol ethoxylates, alkylphenol ethoxylates, carboxylic acid esters, ethoxylated anhydrosorbital esters, glycerol esters,  
15 poly(oxyethylene-co-oxypropylene) based surfactants, polyoxyethylene fatty acid amines, polyoxyethylene fatty acid esters, polyethylene glycol, polyethylene glycol esters, and any mixtures thereof.

20 33. The method of claim 32, wherein said one or more nonionic surfactants are one or more polyoxyethylene fatty acid esters.

34. The method of claim 33, wherein said one or more  
25 polyoxyethylene fatty acid esters are present in an amount about 2.5 wt.% based on the total weight of the absorbent product.



35. The method of claim 20, wherein said at least one finishing agent is present in an amount about 0.01 wt.% to about 10 wt.% based on the total weight of the absorbent product.

5 36. The method of claim 29, wherein said one or more surfactants are present in an amount about 0.01 wt.% to about 10 wt.% based on the total weight of the absorbent product.

10 37. The method of claim 20, wherein said absorbent product is selected from the group consisting of: catamenial tampons, wound dressings, disposable diapers, sanitary napkins, medical tampons, surgical tampons, dental tampons, and nasal tampons.

15 38. The method of claim 20, wherein said composition further comprises one or more additional components selected from the group consisting of: preservative, deodorant, fragrance, malodor counteractant material, humectant and any combinations thereof.